Amendments to the Specification:

Please replace paragraph [0021] with the following amended paragraph:

[0021] In an alternative embodiment, ultrasound imaging system 10 scans in various scan modes such as a fundamental mode, a harmonic mode, a color flow mode, ~~a PDI mode,~~ a power Doppler imaging (PDI) mode, a contrast mode, or a B-flow mode. In the fundamental mode, images are generated from echo signals at fundamental frequencies and in the harmonic mode, images are generated from echo signals at harmonic frequencies. In the color flow mode, a Doppler processor (not shown) is used in parallel to or replaces B-mode processor 14. The I,Q data is provided to the Doppler processor to extract Doppler frequency shift information for color flow mode. The Doppler processor estimates Doppler parameters, such as, velocity, variance and power for estimating motion of flow of blood inside the object. The Doppler parameters are estimated using processes such as auto-correlation or cross-correlation. In the PDI mode, power is used to estimate motion of flow of blood inside the object. In the contrast mode, a contrast agent that usually includes an air bubble is used to improve contrast between signals from different anatomical structures, such as, a tumor and a normal liver. The B-flow mode represents the flow of blood inside the object. The flow appears as changes in a speckled pattern.

Please replace paragraph [0022] with the following amended paragraph:

[0022] Figure 2 shows an embodiment of transducer array 20 and beamformer 12 of ultrasound imaging system 10. ~~Transducer array 20~~ Transducer array 34 includes a plurality of separately driven transducer elements 40, each of which produces a burst of ultrasonic energy when energized by a pulsed waveform produced by beamformer 12. The ultrasonic energy reflected back to transducer array 34 from the object under study is converted to an electrical signal by each receiving transducer element 40 and applied separately to beamformer 12 through a set of transmit/receive (T/R) switches 42. T/R switches 42 are typically diodes which protect beamformer 12 from high voltages generated by beamformer 12 to obtain ultrasonic energy that is reflected from the object.

Please replace paragraph [0023] with the following amended paragraph:

[0023] Transducer elements 40 are driven such that the ultrasonic energy produced is directed, or steered, in a beam. To accomplish this, respective transmit focus time delays 44 are imparted to a multiplicity of pulsers 46. Each pulser 46 is connected to a respective transducer element 40 via T/R switches 42. As an example, transmit focus time delays 44 are read from a look-up table. By appropriately adjusting transmit focus time delays 44, the steered beam can be directed away from a y-axis by an angle θ or focused at a fixed range R on a point P. A sector scan, shown in Figure 3, is performed by scanning a fan-shaped two-dimensional (2D) region 50 along a direction of the angle θ and along an acoustic line 52 extending from an emission point 54. Alternatively, a linear scan, shown in Figure 4, is performed by scanning a rectangular 2D region 60 in a direction along an x-axis. Rectangular region 60 is scanned in the direction along the x-axis by translating acoustic line 52, which travels from emission point 54 in a direction along the y-axis. In yet another alternative ~~embodiment,~~ <u>as shown in Fig. 5,</u> a convex scan or a curved linear scan is performed by scanning a partial fan-shaped region 70 in the direction of the angle θ. Partial fan-shaped region 70 is scanned in the direction of the angle θ by performing an acoustic line scan similar to the linear scan and moving emission point 54 of acoustic line 52 along an arc-shaped trajectory 72.

Please replace paragraph [0024] with the following amended paragraph:

[0024] Referring to Figure 2, echo signals are produced by each burst of ultrasonic energy reflected from objects located at successive ranges along the steered beam. The echo signals are sensed separately by each transducer element 40 and a sample of the magnitude of the echo signals at a particular point in time represents the amount of reflection occurring at a specific range. Due to the differences in the propagation paths between the reflecting point P and each transducer element 40, however, the echo signals will not be detected simultaneously and their amplitudes will not be equal. Beamformer 12 imparts a proper time delay to each echo signal that is reflected from the point P and sums them to provide a single echo signal which accurately indicates the total ultrasonic energy reflected from the point P. Beamformer 12 imparts a proper time delay to each echo signal by imparting respective receive focus time delays 80 to a multiplicity of receive channels 82. Each receive channel 82 is connected to a respective

transducer element 40 via a T/R switch 42. As an example, receive focus time delays 80 are read from a look-up table. The time-delayed echo signals are summed in a receive summer 84. A detailed description of a receive section of beamformer 12 is provided in ~~U.S. Patent 5,961,461.~~ U.S. Patent 5,961,461, issued to Larry Y. L. Mo and Steven C. Miller on November 7, 1997 and entitled "Method and apparatus for adaptive B-mode image enhancement."

Please replace paragraph [0028] with the following amended paragraph:

[0028] ~~A speckle reduction filter (not shown), such as a low pass filter, is implemented between detector 21 and SCDC 16 to reduce speckle noise in an image generated using ultrasound imaging system 10. An example of a low pass filter is a finite impulse response (FIR) filter. In an alternative embodiment,~~ In one embodiment, the speckle reduction filter is a mathematical algorithm that is executed by any one of CPUs 112 and 114 and that is used on a single image frame to identify and reduce speckle noise content. In yet another embodiment, the speckle reduction filter is a median filter, a Wiener filter, an anisotropic diffusion filter, or a wavelet transformation filter, which are mathematical algorithms executed by one of CPUs 112 and 114. In still another alternative embodiment, the speckle reduction filter is a high pass filter that performs structural and feature enhancement. An example of a high pass filter is an infinite impulse response (IIR) filter. In the median filter, a pixel value of an image generated using ultrasound imaging system 10 is replaced by a median value of neighboring pixels. The Wiener filter can be implemented using a least mean square (LMS) algorithm. The anisotropic diffusion filter uses heat diffusion equation and finite elements schemes. The wavelet transformation filter decomposes echo signals into a wavelet domain and obtained wavelet coefficients are soft-thresholded. In the soft-thresholding, wavelets with absolute values below a certain threshold are replaced by zero, while those above the threshold are modified by shrinking them towards zero. A modification of the soft thresholding is to apply nonlinear soft thresholding within finer levels of scales to suppress speckle noise.

Please replace paragraph [0031] with the following amended paragraph:

[0031] The method in step 122 includes dividing the processed data stream into data subsets. As an example, data corresponding to an image frame is divided into data subsets so that a data subset corresponds to a portion of the image frame. The method in step 124 includes

using a speckle reduction filter with a first set of parameters, such as smoothness and detail, to filter each of the data subsets simultaneously. For instance, a first data subset is processed by a speckle reduction filter that is executed by CPU 112 and a second data subset is processed simultaneously with the first data subset by a speckle reduction filter that is executed by CPU 114. As another instance, first data subset and the second data subset are processed simultaneously by a speckle reduction filter that is executed by CPU 112 by using ~~the SIMD~~ <u>Single Instruction-Stream, Multiple Data-Stream (SIMD)</u> capability. A set of controls, such as buttons or menus, are provided to a user to adjust the first set of parameters of the speckle reduction filter. The first set of parameters can be adjusted by the user when a scan is being performed with ultrasound imaging system 10, a replay of recorded scans is being displayed on the screen of display device 36, or a still image is being displayed on the screen of display device 36.

Please insert the following paragraph between Paragraph [0018] and the heading "DETAILED DESCRIPTION OF THE INVENTION:"

[0018.1] Figures 12-15 are flow charts of different method embodiments of the present invention.

Please insert the following paragraphs between Paragraph [0042] and [0043] of the specification:

[0042.1] Figure 12 is a flow chart of one embodiment of the present invention. The method comprises receiving a processed data stream from a processor at 202. The processed stream is divided into data subsets at 204. At 206, the data subsets are simultaneously filtered by using a speckle reduction filter to produce filtered data subsets, wherein the filtering is based on adjustable parameters. At 208, a first image data stream based on the filtered data subsets is produced. At 210, the values of the parameters are changed, and a second image data stream is produced that is based on the filtered data subsets at 218, using a process 212, 214, and 216 that is similar to the process of 202, 204, and 206. At 220, a first image and a second image are simultaneously co-displayed on a common screen, wherein the first image is generated from the first image data stream, and wherein the second image is generated from the second image data

stream, and further wherein the first image and the second image are speckle-reduced images using parameters of the first value set and parameters of the second value set, respectively.

[0042.2] Figure 13 is a flow chart of another embodiment of the present invention. At 202, a processed data stream is received from a processor. At 204, the processed data stream is divided into data subsets. At 306, the data subsets are simultaneously filtered by using a speckle reduction filter to produce filtered data subsets. At 208, an image data stream is produced that is based on the filtered data subsets. At 310, a filtered image and an original unfiltered image are simultaneously co-displayed on a common screen, wherein the filtered and the original unfiltered images are reconstructed from a data set that includes the image data stream and the processed data stream. At 312, a user is able to enter the dual display mode, at least one of during a scan, while a replay of pre-recorded cine loops are displayed on a screen, and while a still image that is not updated periodically is displayed on the screen.

[0042.3] Figure 14 is a flow chart of yet another configuration of the present invention. The method includes receiving a processed data stream from a processor at 202, dividing the processed data stream into data subsets at 204, automatically, without user intervention, and optimizing the parameters upon which the speckle reduction filter is based, in accordance with the application and a scan of the imaging system at 402. The method further includes simultaneously filtering the data subsets by using a speckle reduction filter to produce filtered data subsets based on the adjustable parameters at 206, and producing an image data stream based on the filtered data subsets at 208.

[0042.4] Figure 15 is a flow chart of yet another configuration of the present invention. The method includes receiving a processed data stream from a processor at 202, dividing the processed data stream into data subsets at 204, and simultaneously filtering the data subsets by using a speckle reduction filter to produce filtered data subsets at 306. The method further includes, at 206, simultaneously filtering the data subsets by using a speckle reduction filter to produce filtered data subsets, producing a second image data stream based on the filtered data subsets at 502, and simultaneously co-displaying a filtered image and a second image on a common screen, wherein the filtered image is generated from the filtered image data stream and the second image is generated from the second image data stream at 504.